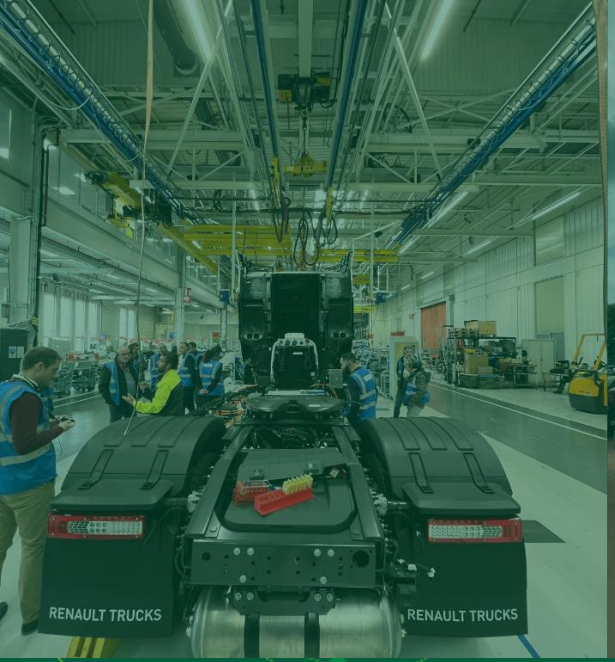



Camions Electriques à Batteries

Webinaire – 17 mars 2026

France Supply Chain

France Supply Chain by Aslog

L'ASSOCIATION DE RÉFÉRENCE DES PROFESSIONNELS DE LA SUPPLY CHAIN

Permettre aux Supply Chains de **contribuer à un monde durable** pour les personnes, la planète et la performance

Renforcer l'impact de la Supply Chain dans la **compétitivité** des entreprises

Promouvoir les métiers de la Supply Chain pour **développer attractivité et reconnaissance**

450
Entreprises & Écoles Adhérentes

50+
Ans

5000
Membres

100+
Projets


DE LA PME AU CAC40


INSTITUTIONS & HÔPITAUX


SERVICES


ECOLES & RECHERCHE


INDUSTRIE


RETAIL

MICHELIN TESTIMONY

17th of March 2026

PRESENTATION

1. EUROPEAN LOGISTICS
2. AMBITIONS
3. STRATEGY
4. USE CASES

1 – EUROPEAN LOGISTICS

PRESENTATION

MICHELIN

MICHELIN LOGISTICS IN EUROPE

Some key figures:

- ~1500 trucks/day
- ~ 300 service providers
- ~ 400 M€/year
- ~ 3,4 MT carried/year
- ~ 250 kT CO2/year
- 3 Transport modes

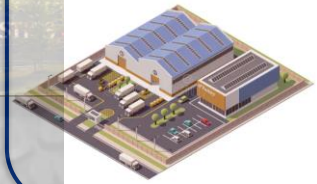
24 Plants

13 European Distribution Center

RT Customer

Distribution platforms

19 Magasins d'Usine MICHELIN



42 Stocks Avancés

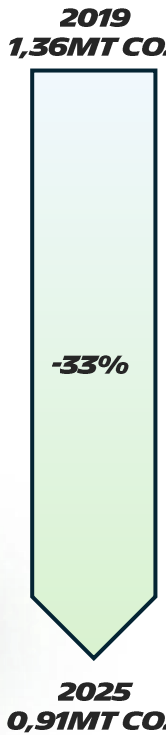
OE Customer

2 – CO2

AMBITIONS

AMBITIONS

2019 - 2025



→ 2030 / 2050

EXTERNAL COMMITMENT

Scope 3 without Usage

2030

-27,5%**

CO_2 emissions vs 2019

2050

-90%

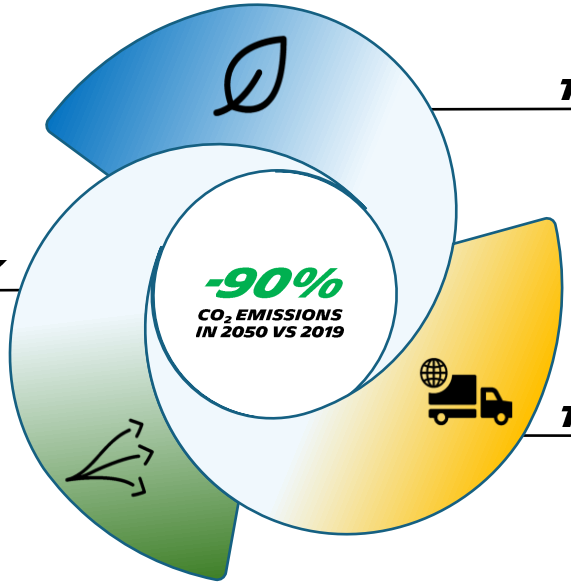
NET ZERO EMISSIONS

*** Validated in July 2024 by **SBTi***

3 – STRATEGY

3 PILLARS

STRATEGY

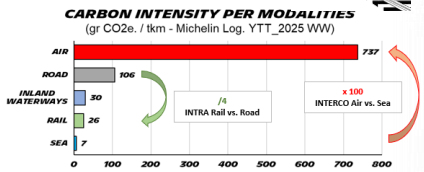


TRANSPORT LESS

- **Improving effectiveness**
- t carried / t sold
- Levers
  - Integration **Finished Goods** / **Non-Finished Goods**
  - **Direct Factory Shipments**
  - …

TRANSPORT DIFFERENTLY

- t CO2 / t carried
- **Collaborating** to external organizations
- **Innovating** through environmentally and socially friendly technologies
- Levers:
  - Electrical vehicles (**BEV**, **FCEV**, …)
  - **EMS**
  - Wind Powered
  - …



TRANSPORT BETTER

- **Improving efficiency**
- t CO2 / t carried
- Levers
  - Operational excellence (filling rate, network, …)
  - **Local 2 Local**
  - Multimodality (rail, Inland water)
  - Limit airfreight
  - Alternatives fuels (bio-fuel, e-fuel, ..)
  - …

Road Freight Decarbonization with BEV Trucks

March 17, 2026

Pierre CHAUFOUR – Business Intelligence – Renault Trucks

Stève MANIKAS
Electromobility Solutions Sales Director - Renault Trucks

RENAULT TRUCKS

01

Renault Trucks Decarbonization Strategy

The Shift To Electric Started!

Our footprint in France

Blainville-sur-Orne

- Medium duty trucks
- Electric trucks
- Cabs & components
- Vehicle adaptations

Bourg-en-Bresse

- Heavy duty trucks
- Electric trucks
- Completely Knock Down kits
- Used Trucks Factory
- Vehicle adaptations

Limoges

- Remanufacturing

Lyon

- Headquarters
- R&D center
- Engine & axles
- Stamping
- Spare parts

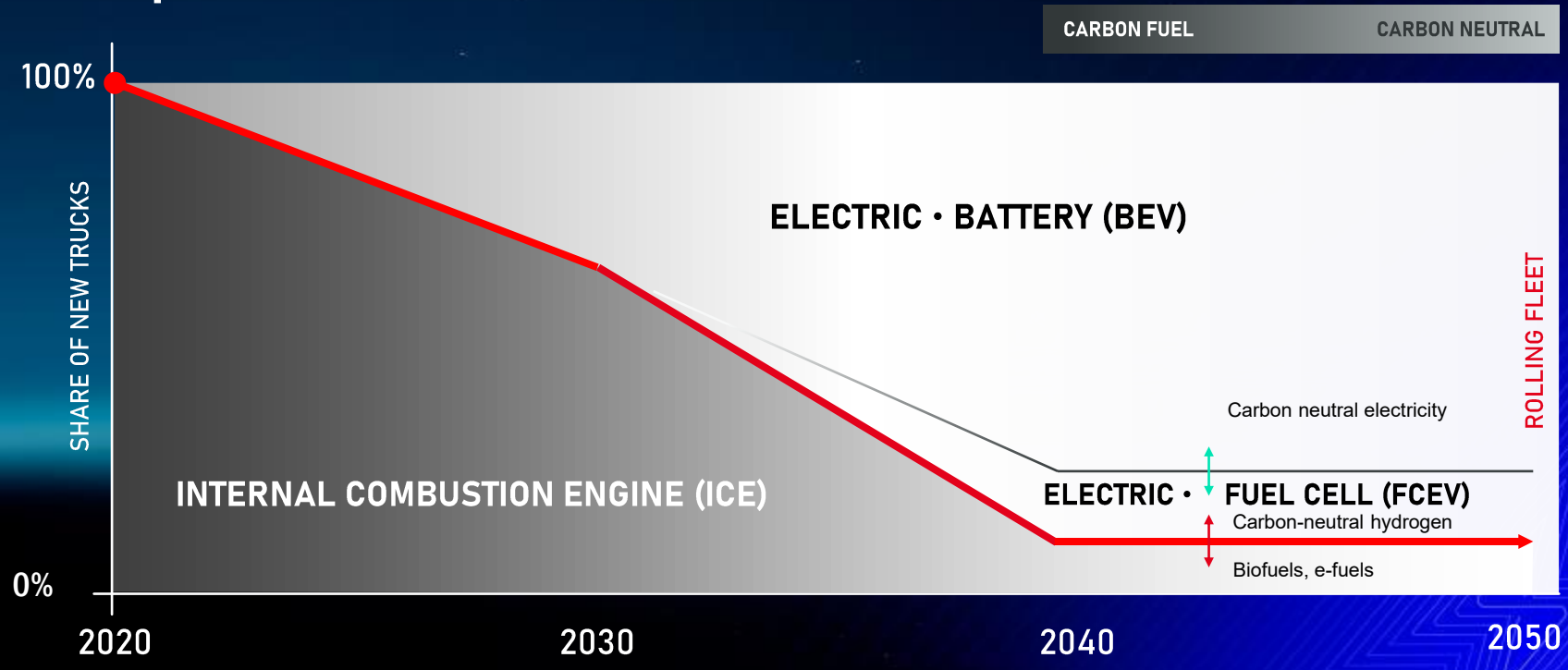
8,100
workforce

4,600
industrial workforce

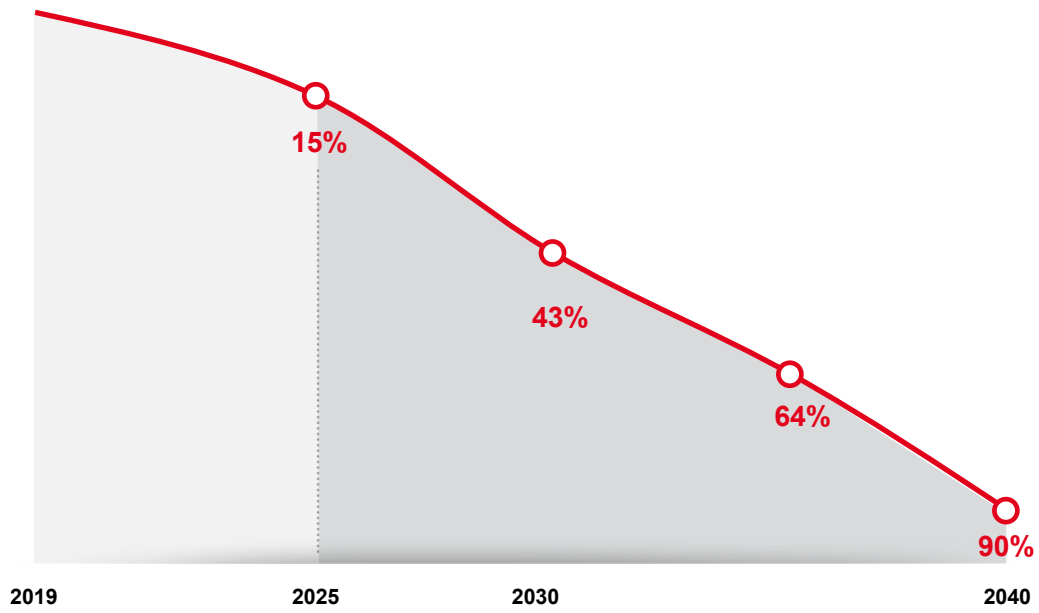
1,000
R&D workforce

RENAULT TRUCKS

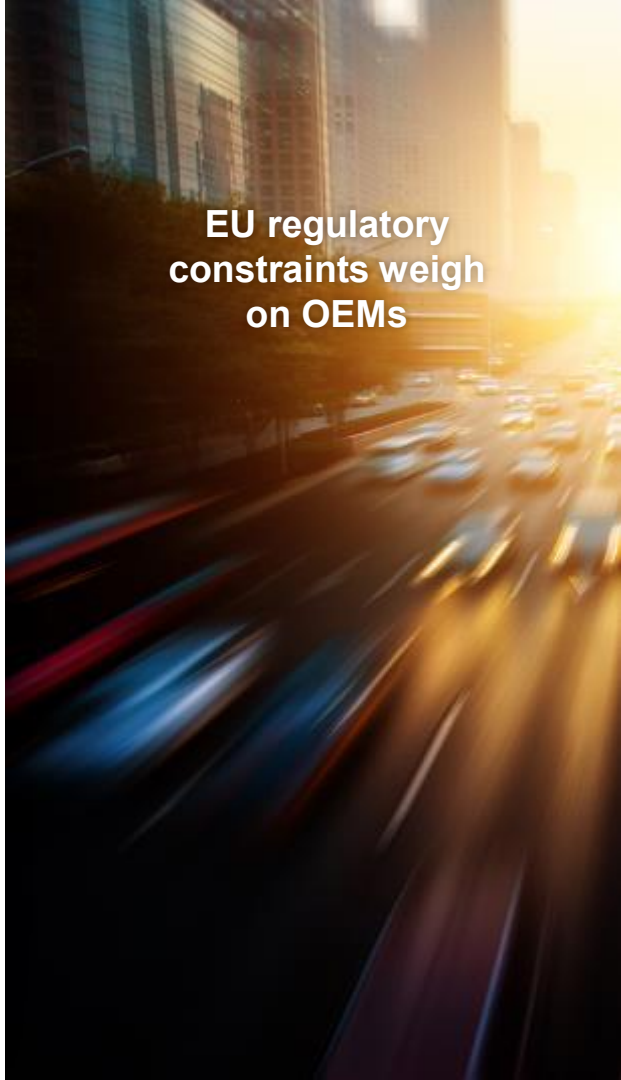
Renault Trucks roadmap towards carbon neutral transportation



Ambitious CO_2 reduction targets



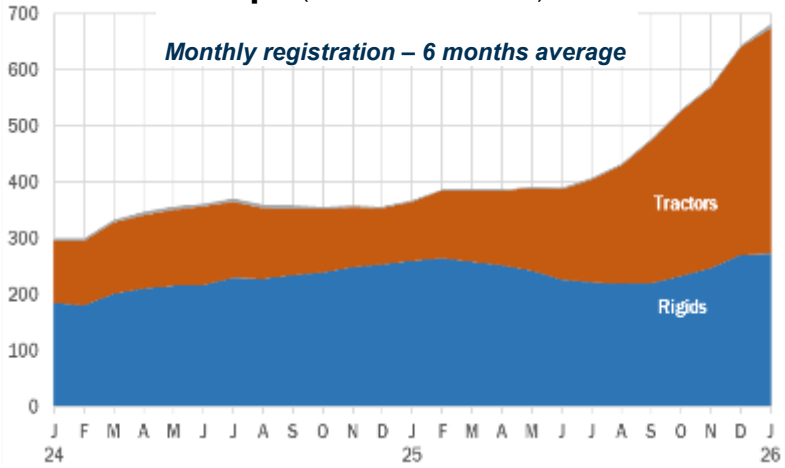
Index 100 = Industry average baseline in 2019



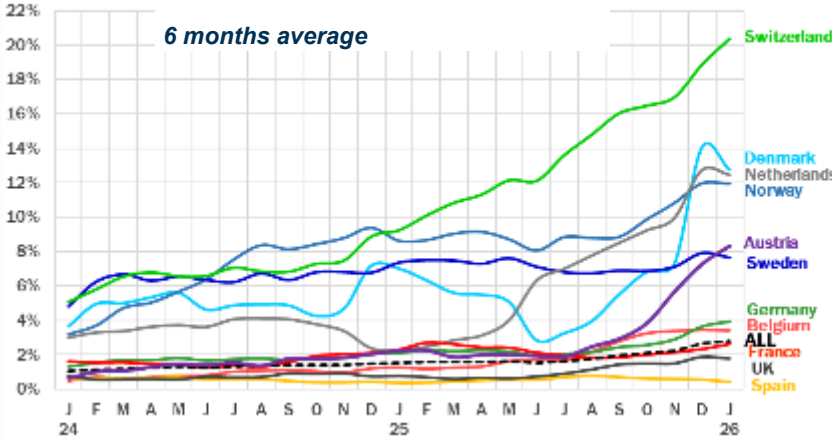
Market outlook

Electric trucks above 16 t
End of January 2026

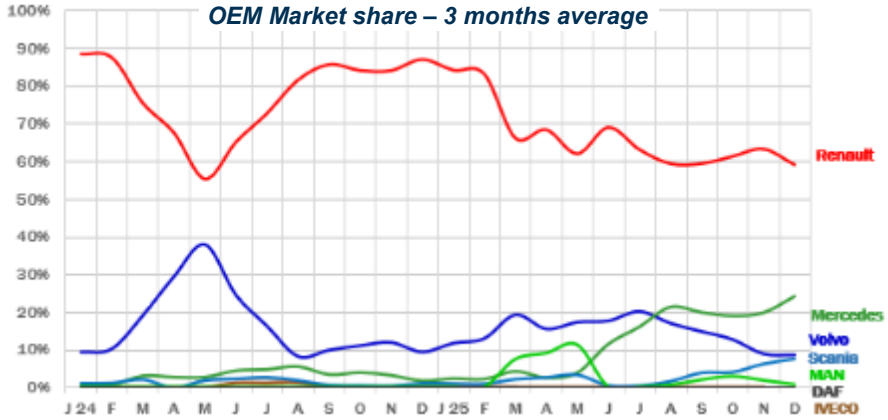
Europe (EU27+CH+UK+NO)



Penetration in countries



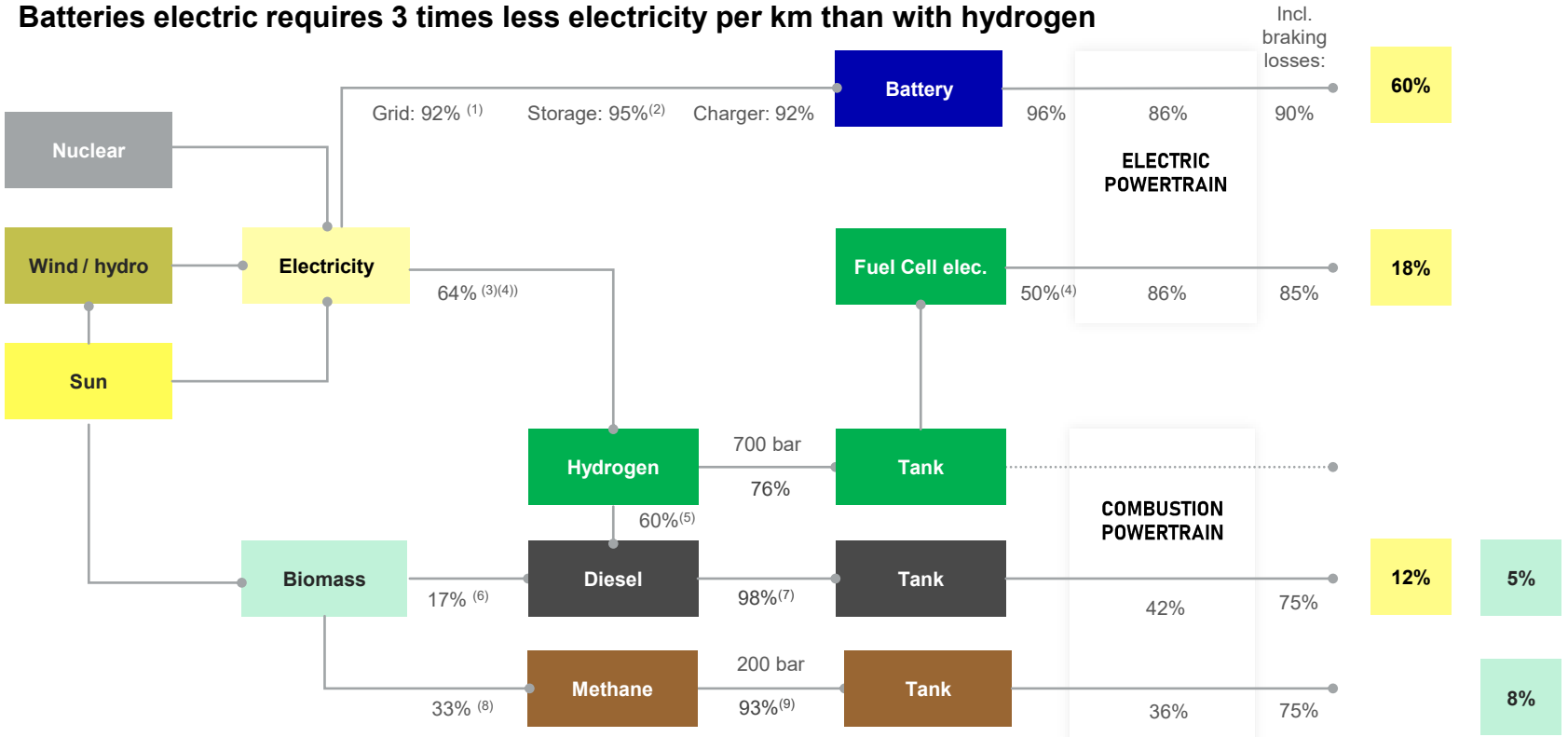
France



02 Road Freight decarbonisation

Well-To-Wheel Energy Efficiency

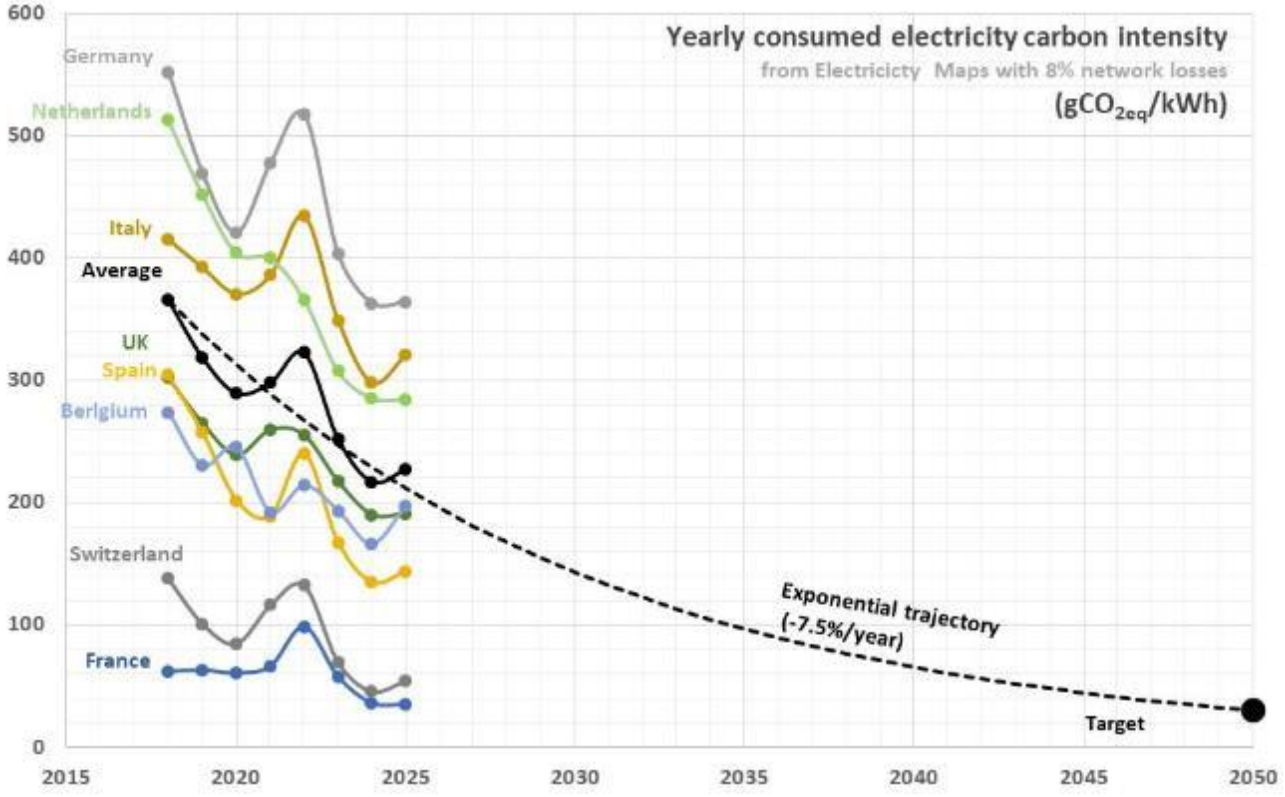
Batteries electric requires 3 times less electricity per km than with hydrogen



Average values over time. **(1)** 2.2 % in high-voltage network (source : RTE), 6% in medium and low voltage network. **(2)** Considered as example: "Target 2050: 100% renewable energy supply", UBA, 2010, figure 5, link : 52.8 TWh/y stored with an average efficiency of 70% (batteries, dams, hydrogen), hence 23 TWh/y losses out of a consumption of 506 TWh/y, hence 5% losses. **(3)** JEC "Well-to-wheel" report 2020, EMEL1/CH2a pathway. **(4)** Based on Hydrogen Low Heating Value (120 MJ/kg). **(5)** "E-Fuels: A techno economic assessment of European domestic production and imports towards 2050", CONCAWE, 2022. **(6)** Considered as example: in France, one hectare of rapeseed getting 1,300 kWh/m2/year as sun energy (65 MWh biomass with 0.5% sun to biomass efficiency) results in 1,500 l (13.6 MWh) of B100, and requires 15.1 MWh of additional primary energy (JEC 2020 ROFA1), hence a biomass to biodiesel efficiency of 13.6/(65+15.1) = 17%. **(7)** JEC "Well-to-wheel" report 2020 , COD1 pathway. **(8)** Considered as example: in France, one kg of straw (14.5 MJ/kg at 10% humidity) results in 7.5 MJ biogas produced (France Stratégie, 2021, page 132), and requires 8.5 MJ of additional primary energy (JEC 2020 OWCG4), hence a biomass to biogas efficiency of 7.5 / (14.5 + 8.5) = 33%. **(9)** JEC "Well-to-wheel" report 2020 , OWCG4

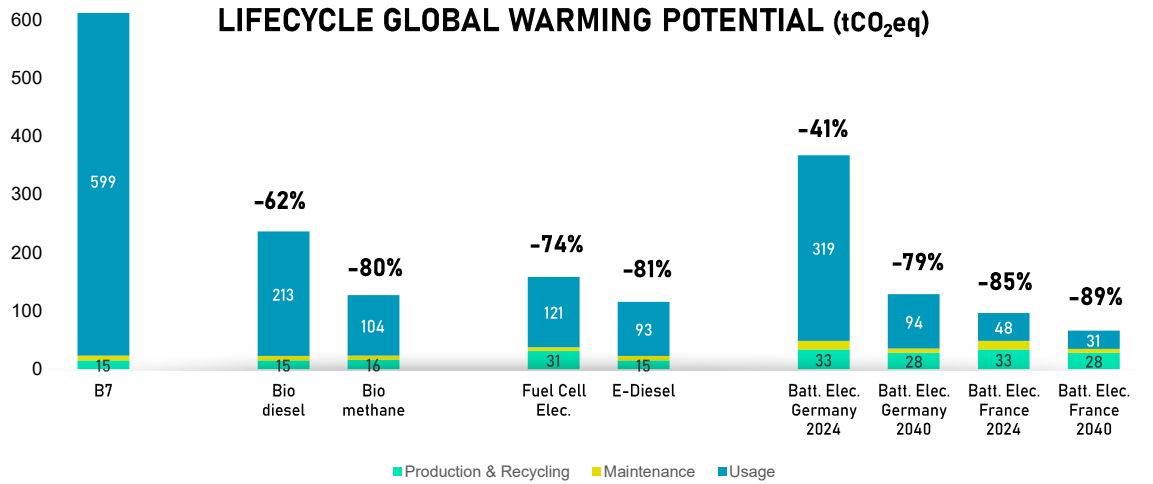
Electricity decarbonisation started

On average since 2018, the electricity carbon content is decreasing by **7%/year** in the 8 European countries of the chart.



Global Warming potential

➔ **Batteries, hydrogen and bio energies are valid candidates to decarbonise road freight**



40-ton regional-haul tractor
Operating over 800,000 km

Production & recycling & maintenance : Volvo internal LCA for diesel and BEV in 2020, scaled for the other cases with Ricardo ED11344 report. For batteries, change after 7 years taken into account, assuming that 40% of the accumulated storage energy is left at SOH=80% for the second life, and that recycling saves 30% of the carbon footprint of a new battery.

CO_2 emission coefficients:

Pump Diesel: 3.09 $kgCO_2eq/l$ in 2020 (7% bio) decreasing linearly to 2.85 $kgCO_2eq/l$ in 2030 (17% bio), and constant afterwards

B100: 1.14 $kgCO_2eq/l$ in 2022 (ADEME), decreasing linearly to 1/3 of this value in 2050

E-diesel: 0.57 $kgCO_2eq/l$ in 2020, decreasing to 0.17 $kgCO_2eq/l$ in 2050.

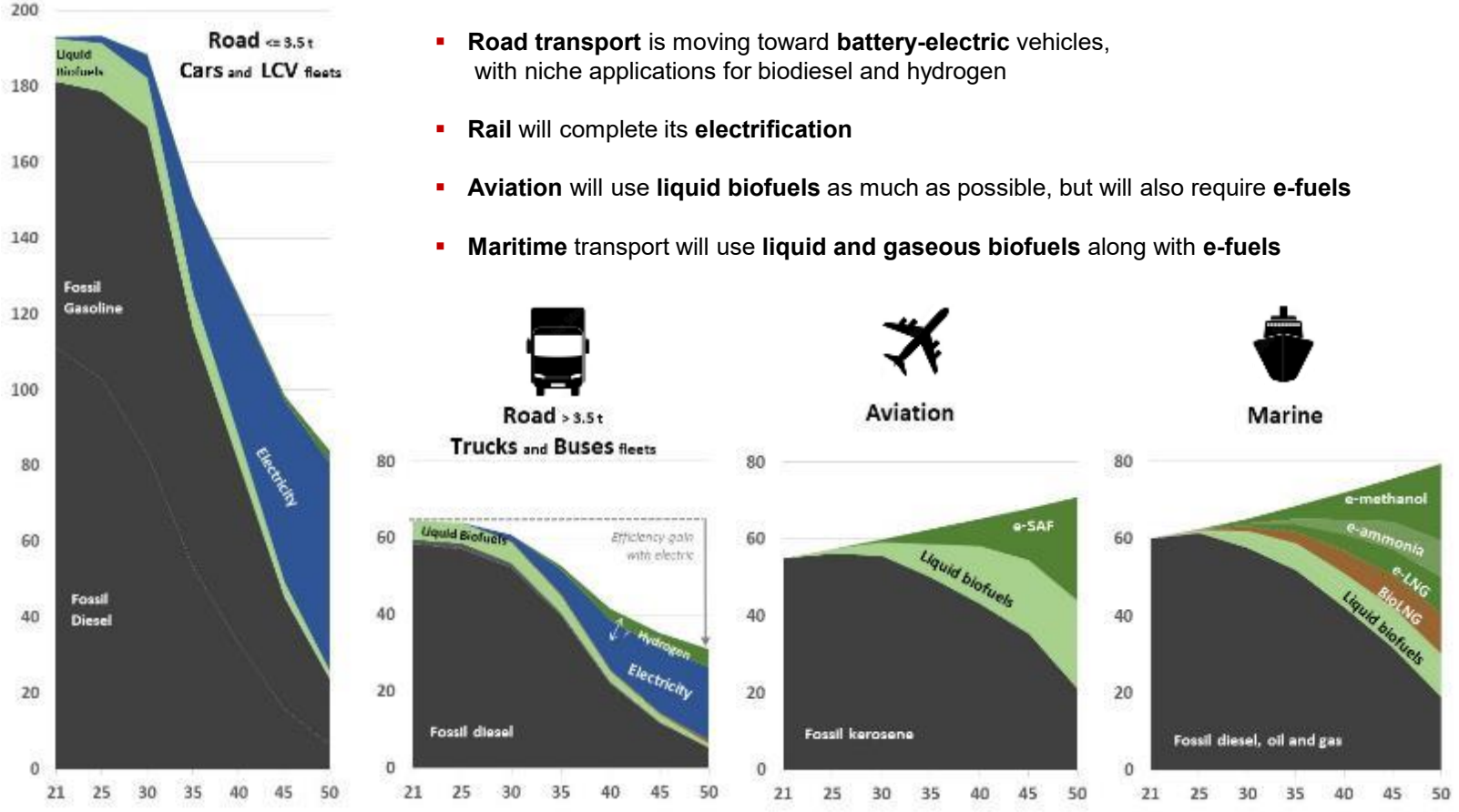
Bio-CNG: 0.66 $kgCO_2eq/kgCH_4$ in 2020 (ADEME), decreasing linearly to at 1/3 of this value in 2050.

Green Hydrogen: 2.7 $kgCO_2eq/kgH_2$ in 2020, decreasing to 1.5 $kgCO_2eq/kgH_2$ in 2050

Grid electricity : 57 gCO_2eq/kWh in 2021 in France (ADEME), 505 gCO2eq/kWh in 2018 in Germany (IEA), decreasing linearly to 30 gCO_2eq/kWh in 2050.

Focus on Transport

Consumption in Europe (EU27)
Millions Tons Oil Equivalent

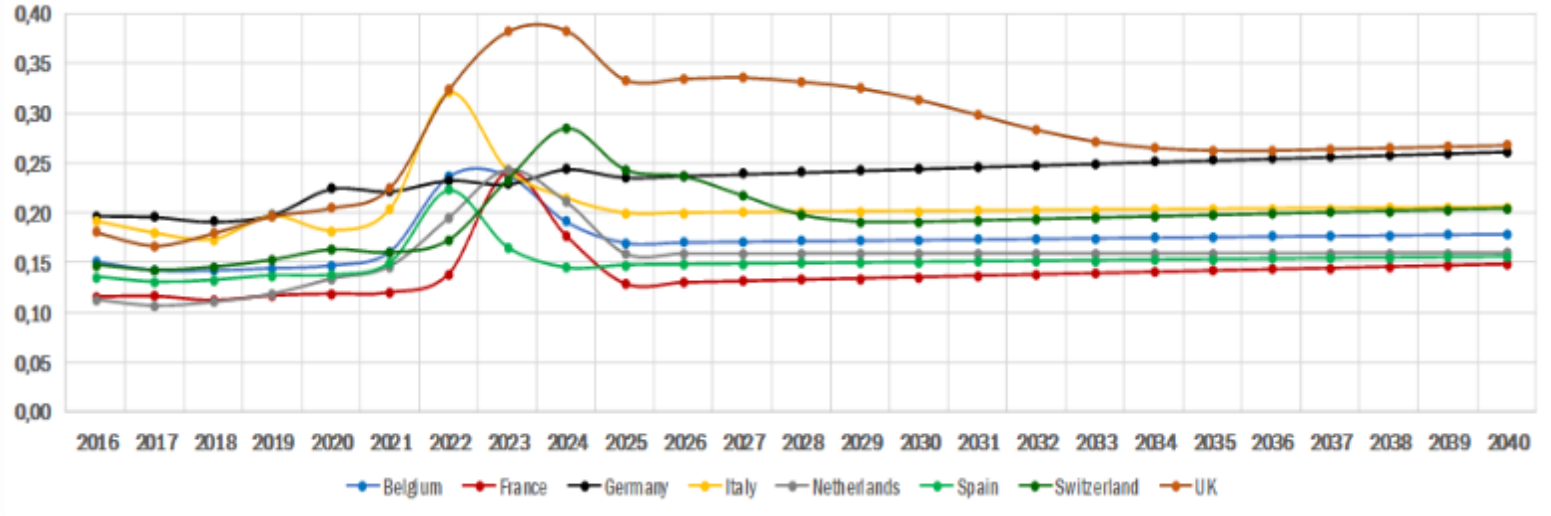


- **Road transport** is moving toward **battery-electric** vehicles, with niche applications for biodiesel and hydrogen
- **Rail** will complete its **electrification**
- **Aviation** will use **liquid biofuels** as much as possible, but will also require **e-fuels**
- **Maritime** transport will use **liquid and gaseous biofuels** along with **e-fuels**

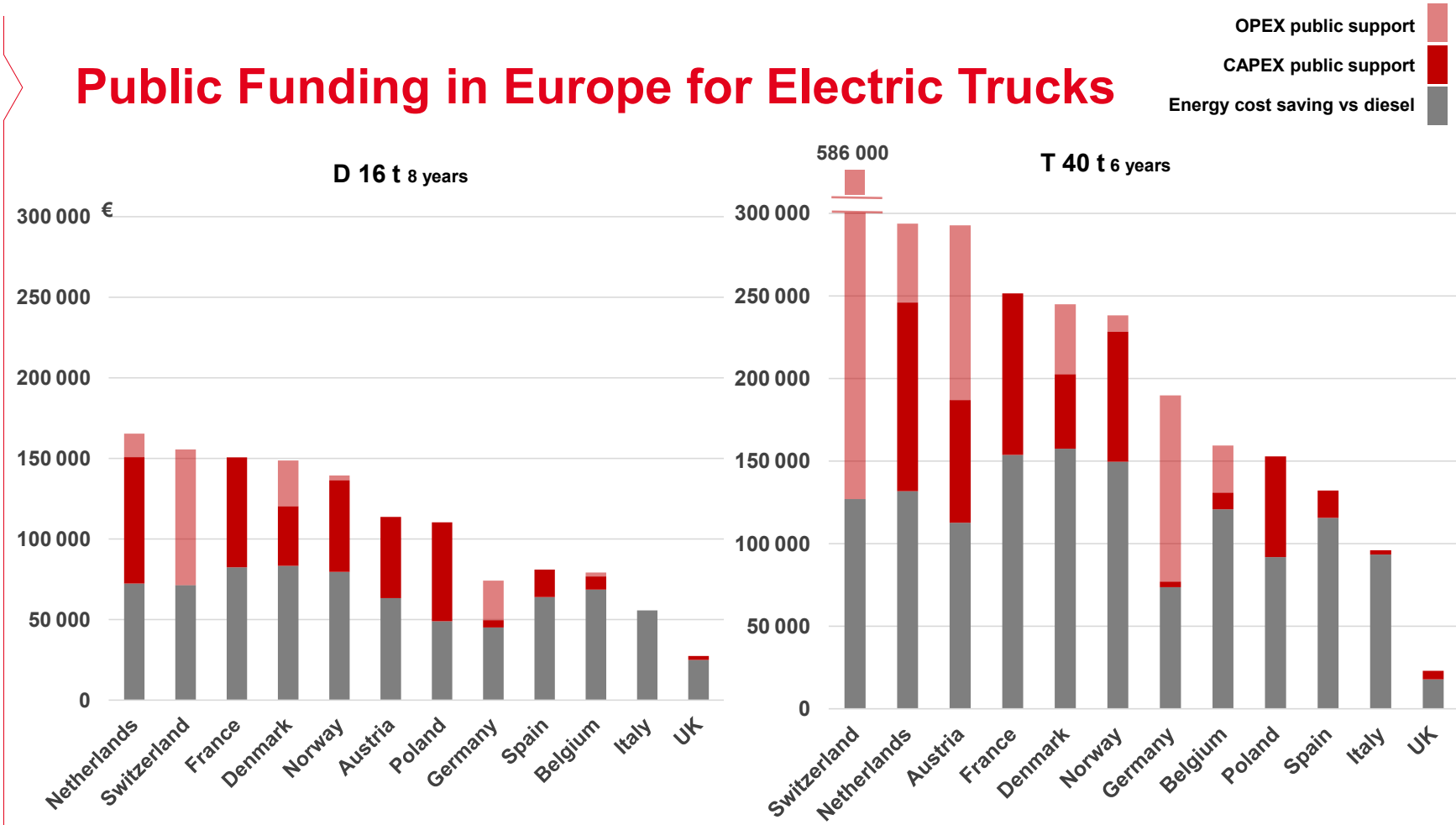
Plug Electricity Price Forecast

Feb 2026

€$_{2023}$ / kWh w/o VAT for 0.5 to 2.0 GWh/year (IC band)



Public Funding in Europe for Electric Trucks

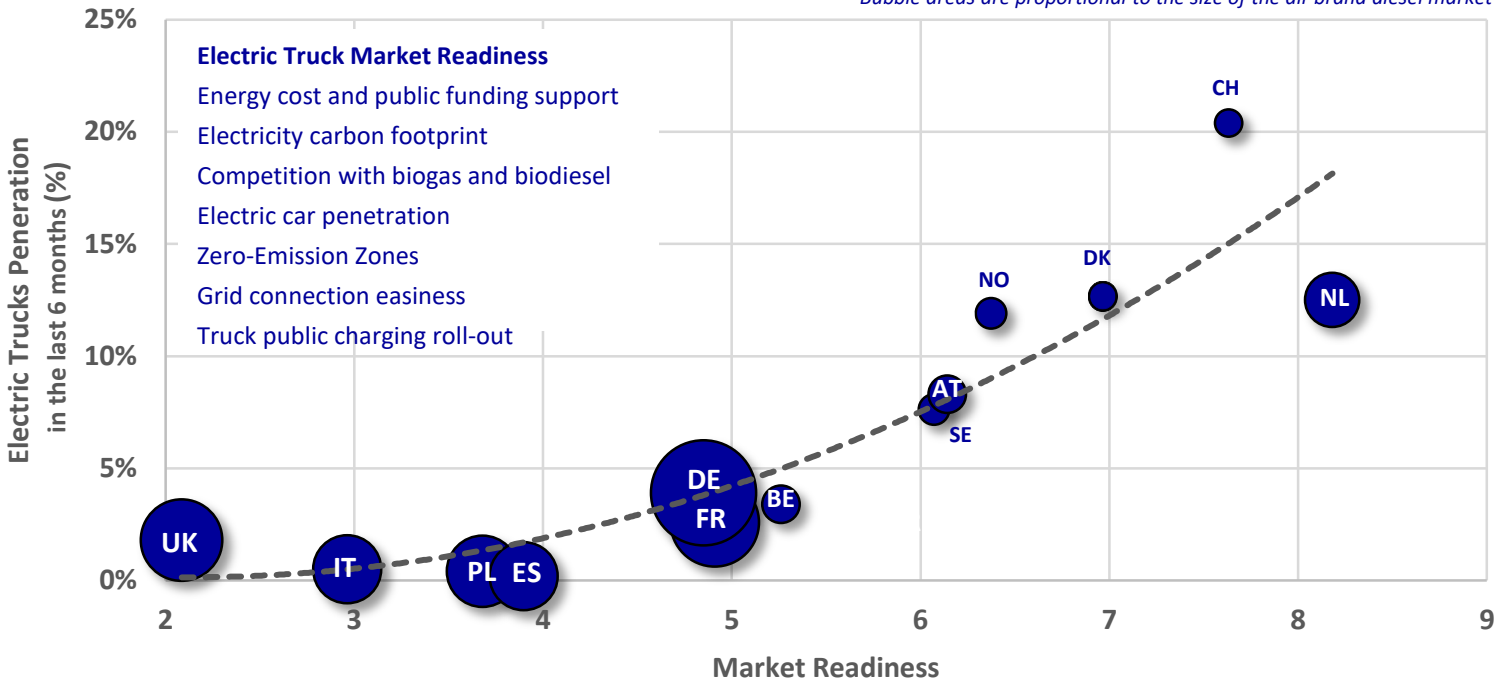


Estimated potential public funding support for the truck purchase, operation, and charging infrastructure, including likelihood coefficients when relevant
Charging infra cost not included in the energy cost saving.

Market Readiness for All Electric Trucks

- **Netherlands** and **Switzerland** are the most mature
- **Denmark, Norway, Sweden and Austria** have an interesting market readiness
- **France** and **Germany** are at a similar stage

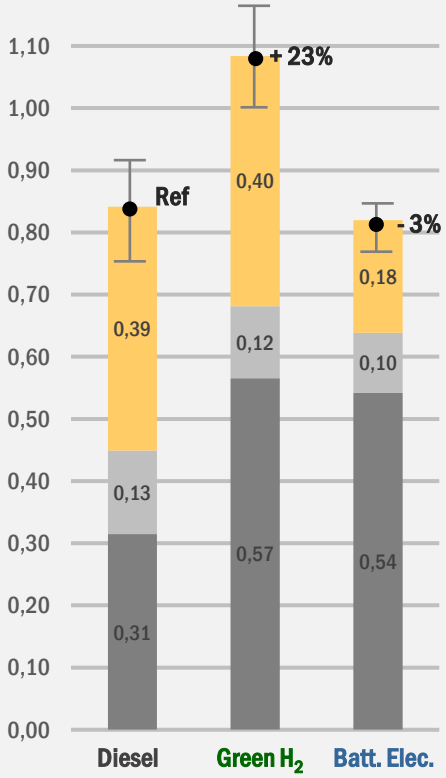
Bubble areas are proportional to the size of the all-brand diesel market



TCO 2030 Urban

TOTAL COST OF OWNERSHIP for a truck bought in 2030

€$_{2024}$ / km



TCO parity electric vs diesel before 2030 for urban trucks

16-ton urban distribution truck running 280 000 km over 7 years

Energy cost (average over 7 years) is based on a forecast using financial market futures when available, no VAT included

- Diesel: 1.60 €/l (30-36). Includes ETS2
- B100: 1.93 €/l (30-36)
- Bio-CNG: 2.52 €/kg (30-36). Public subsidies not considered.
- Green hydrogen: 7.1 €/kg (30-36)
- Electricity: 0.19 €/kWh (30-36), based on depot night AC charging and with IC band contract. Includes charger installation and initial connection cost amortization.

Tires, air drag improvements, and internal combustion engine (incl. Euro VII) improvements over time taken into account. Energy consumption increase of 3.5% (16-ton), 2.4% (40-ton) per added ton of empty weight for diesel, 1.5% for electric.

Maintenance cost includes predictive & corrective costs and tires (corrected proportionally to vehicle weight.).

Truck cost includes purchase, resale and capital cost.
All decided public support taken into account in 2024, none in 2030

- Battery pack: 130 €/kWh (2030) with 80% Depth of Discharge, and a residual value of 20% of a new battery for second life at 80% SOH.
- H_2 tank: 400 €/kg (2030). Fuel cell: 170 €/kW (2030), average cycle efficiency of 55% (2030), efficiency decrease of 5 points at mid-life.
- Initial low-volume production and extra warranty cost taken into account for FCEV and BEV.
- Diesel and gas: +2%/year cost increase after 2027 due to the volume base and suppliers number reduction.

Uncertainty range on the graph relates only to energy cost.

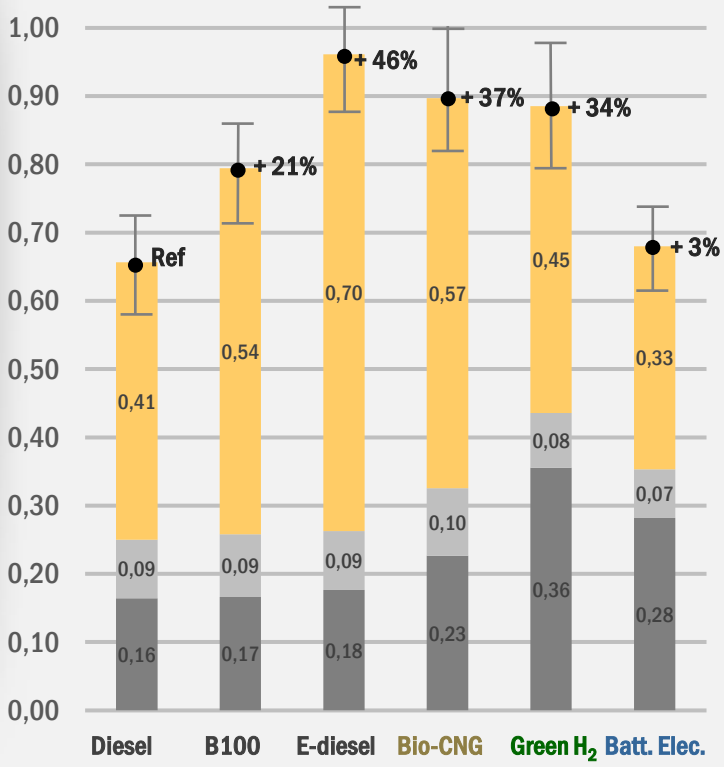
All values in Jan 1st 2024 Euros (no inflation) without VAT.

Comparison exercise independent from Renault Trucks product plan

TCO 2030
Long-haul

TOTAL COST OF OWNERSHIP for a truck bought in 2030

€$_{2024}$ / km



TCO parity electric vs diesel before 2030 for long-haul trucks

40-ton urban distribution truck running 829 000 km over 7 years

Energy cost (average over 7 years) is based on a forecast using financial market futures when available, no VAT included

- Diesel: 1.60 €/l (30-36). Includes ETS2
- B100: 1.93 €/l (30-36)
- Bio-CNG: 2.52 €/kg (30-36). Public subsidies not considered.
- Green hydrogen: 7.1 €/kg (30-36)
- Electricity: 60% private DC at 0.22 €/kWh (30-36), based on depot night DC charging with IC band. Includes charger installation & initial connection cost amortization. And 40% public at 0,32 €/kWh (30-36).

Tires, air drag improvements, and internal combustion engine (incl. Euro VII) improvements over time taken into account. Energy consumption increase of 3.5% (16-ton), 2.4% (40-ton) per added ton of empty weight for diesel, 1.5% for electric.

Maintenance cost includes predictive & corrective costs and tires (corrected proportionally to vehicle weight.).

Truck cost includes purchase, resale and capital cost.
All decided public support taken into account in 2024, none in 2030

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Uncertainty range on the graph relates only to energy cost.

All values in Jan 1st 2024 Euros (no inflation) without VAT.

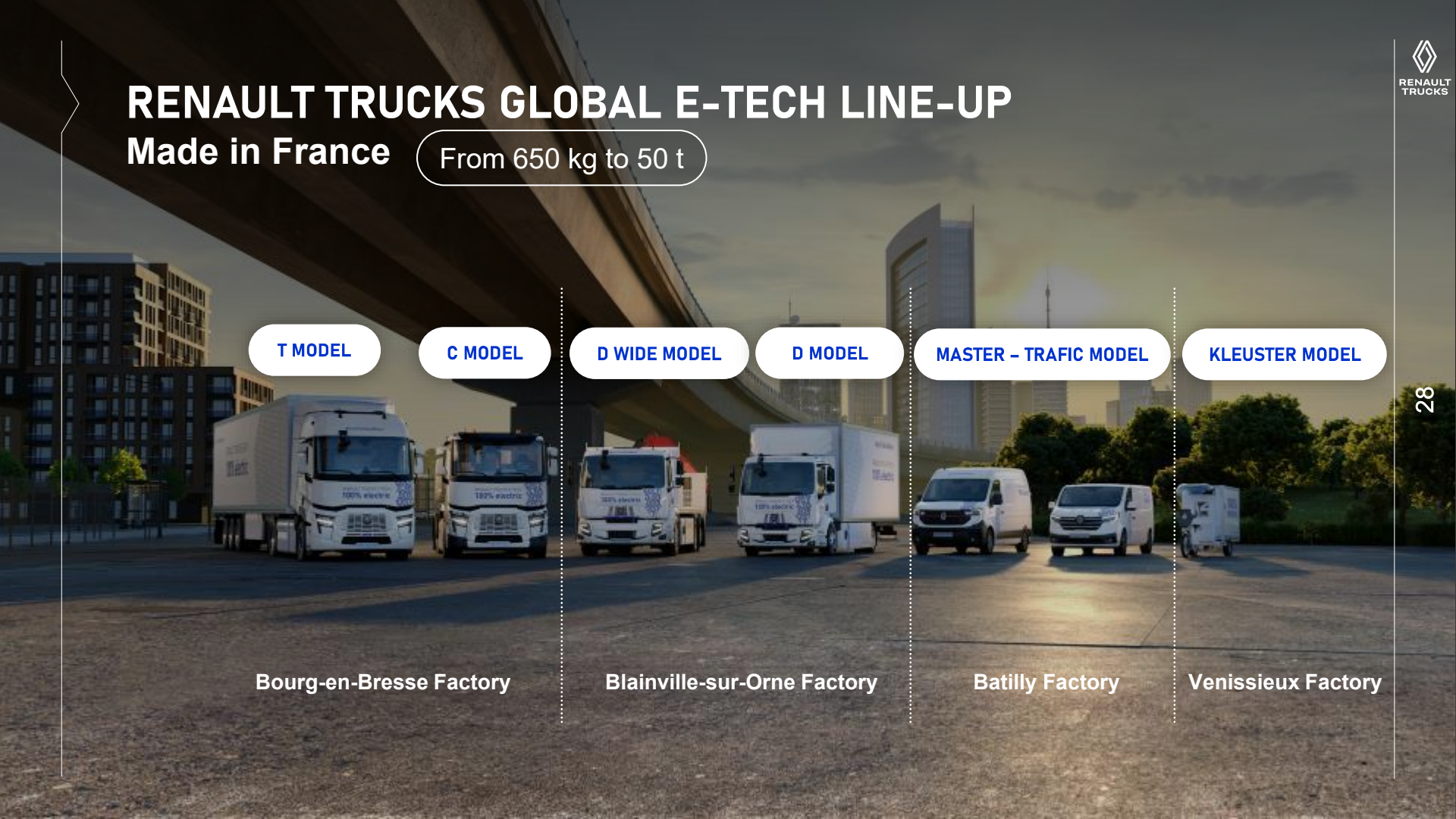
Comparison exercise independent from Renault Trucks product plan

03 Product range

RENAULT TRUCKS GLOBAL E-TECH LINE-UP

Made in France

From 650 kg to 50 t



T MODEL	C MODEL	D WIDE MODEL	D MODEL	MASTER – TRAFIC MODEL	KLEUSTER MODEL
Bourg-en-Bresse Factory		Blainville-sur-Orne Factory		Batilly Factory	Venissieux Factory

Renault Trucks E-Tech D 16t

City distribution solution

TIRES 19’5

1 ELECTRIC MOTOR
Max power 185 kW
Cont. power 130 kW
Max torque 425 Nm

BATTERIES
Up to 375 kWh
3 to 4 packs
Lithium-ion

DRIVING RANGE
Up to 350 Kms
with a van body 4X94 kWh

PAYLOAD
GVW capacity 16,7t

Front axle capacity 5.8t

CHARGING
AC - 43 kW onboard charger
DC - Fast charge up to150 kW

4X2 WHEELBASE
3,800 mm up to 6,500 mm
Full air suspension

OPTIONS
ePTO mechanical or electrical
Cab deflector
Tail lift pre-equipment
ADR AT compatible

Renault Trucks E-Tech D18t XL

City distribution solution with higher payload and range

1 ELECTRIC MOTOR
Max power 185 kW
Cont. power 130 kW
Max torque 425 Nm

BATTERIES
Up to 375 kWh
3 to 4 packs
Lithium-ion

Up to 565 kWh
5 to 6 packs
Only for wheelbases 5,900 mm 6,200 mm

DRIVING RANGE
Up to 530 Kms
with a van body 6X94 kWh

PAYLOAD
GVW capacity 18t

TIRES 22’5

Front axle capacity 7,1t

CHARGING
AC - 43 kW onboard charger
DC - Fast charge up to150 kW

4X2 WHEELBASE
4,100 mm up to 6,200 mm
Full air suspension

OPTIONS
ePTO mechanical or electrical
Cab deflector
Tail lift pre-equipment
ADR AT compatible

Renault Trucks E-Tech D Wide 19t & 26t

For urban & peri urban activities

2 ELECTRIC MOTORS
Max power 370 kW
Cont. power 260 kW
Max torque 850 Nm

BATTERIES
Up to 375 kWh
3 to 4 packs
Lithium-ion

DRIVING RANGE
Up to 300 km
with a van body

Up to 125 km
with a refuse collector body

PAYLOAD
GVW capacity 21t / 28t

TIRES 22’5

Front axle capacity 8t/9t

CHARGING
AC - 43 kW onboard charger
DC - Fast charge up to150 kW

WHEELBASE
3,900 mm up to 6,800 mm
Full air suspension

OPTIONS
ePTO mechanical & electrical
Refuse collector *pre-arangements*
Cab back crane legs *pre-arangements*
Tail lift pre-equipment
ADR AT compatible

E-TECH TRACTORS OFFER EVOLUTION in 2026

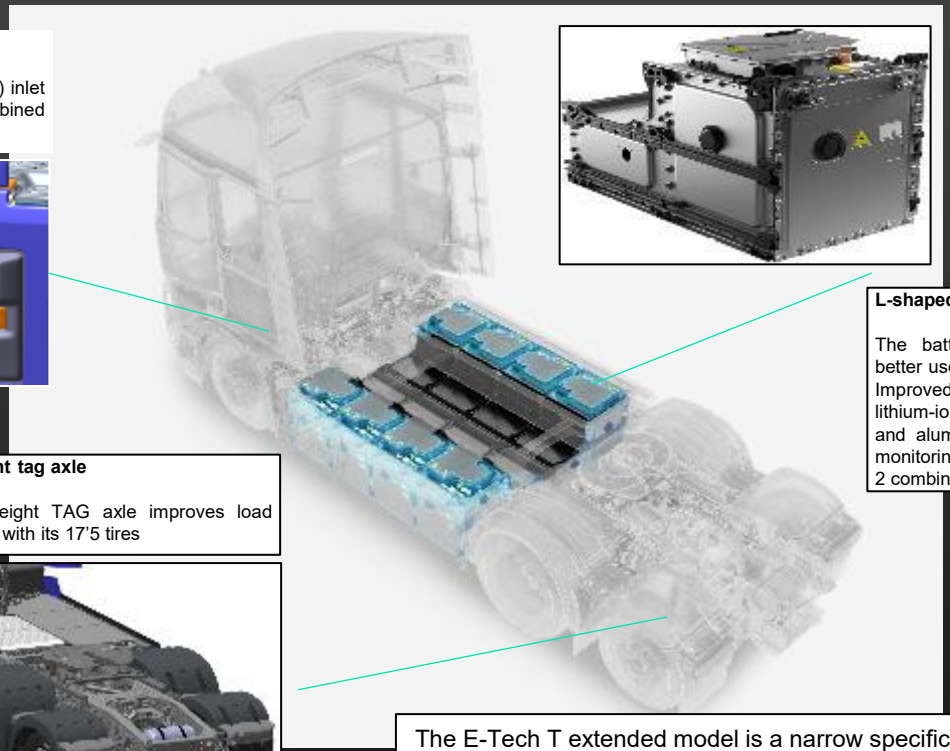
	REGIONAL DISTRIBUTION		INTER REGIONAL HAUL	
	2025 Offer	2026 T 540	2026 T 585	2026 T780
Driveline type	**Gearbox Diesel type + transmission shaft**	**Gearbox BEV type + transmission shaft**	**E-Axle type**	
Energy capacity @ BoL (installed/useable)	**540 kWh** 380 kWh	**540 kWh** 410 kWh	**585 kWh** 630 kWh	**780 kWh** 630 kWh
Range (km) with one charge	up to **300 km**	up to **450 km**	up to **500 km**	up to **700 km**
Time to charge (20-80%)	**60min** with CCS up to **250kW**	**50min** with CCS up to **350kW** (No AC capacity)	**70min** with CCS up to **350kW** (No AC capacity) **40min** with MCS up to **720kW**	
Load capacity @ UE GCW 40 @ FR GCW44 with ISO trailer	**23T / 25T**	**22,5T / 24,5 T**	**22,2 / 26,2T**	
Max technical GCW	Up to 50T	Up to 65T	Up to 48T	

E-Tech T extended – Chassis overview

Up to 780kWh batteries to reach 700km

Charger interface

MCS (Megawatt Charging System) inlet and combined CCS2 (Combined Charging System) inlet



L-shaped battery

The batteries are L-shaped to make better use of the space on the frame.
Improved battery cells with prismatic lithium-ion NCA technology (nickel, cobalt and aluminum) and an updated battery monitoring system.
2 combinations acc. to wheelbase

Lightweight tag axle

The lightweight TAG axle improves load distribution with its 17’5 tires

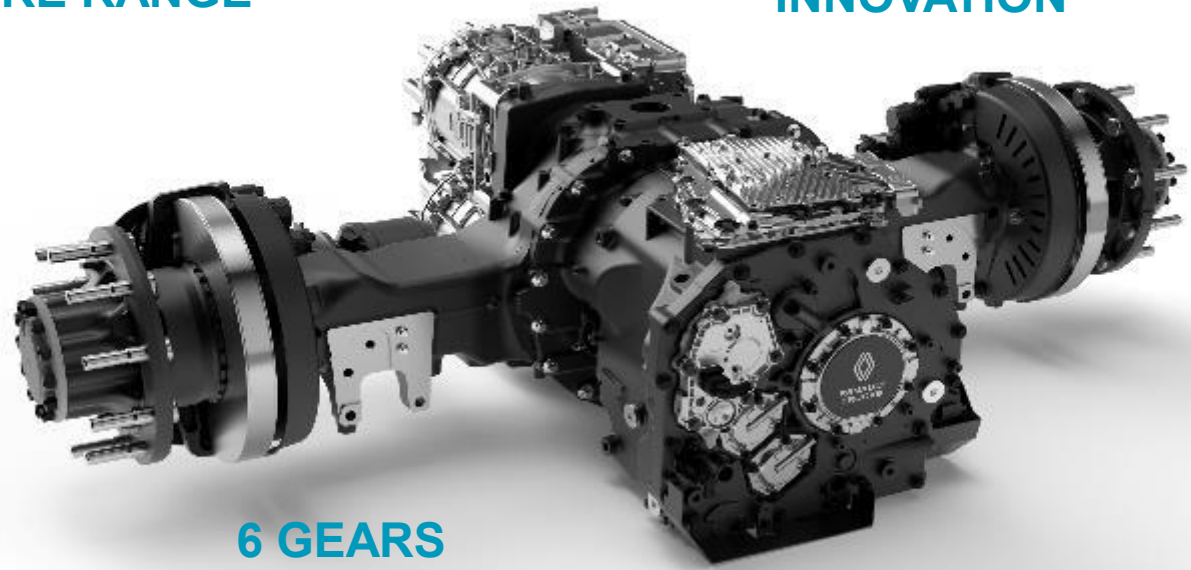
The E-Tech T extended model is a narrow specification T, with a new battery platform, new driveline (E-Axle) and new charging interface including MSC standard.

Powered by eAxle

available in 420 or 460 kW power version (570hp – 625hp)

MORE SPACE FOR BATTERIES
MORE RANGE

IN-HOUSE TECHNOLOGY
INNOVATION



6 GEARS
1000 N.M DUAL MOTORS

The new e-axle integrates electric motors, power electronics, transmission and a traditional 13t axle capacity

Renault Trucks E-Tech MHDV 2026

E-AXLE & L-SHAPE BATTERIES ON T

Up to 700 km

NEW BATTERIES GENERATION ON T & C

Up to 450 km

NEW BATTERIES ON D & D WIDE

D12 XL (14t)
2.40 m width

4 – BEV

USE CASES

KEY SUCCESS FACTORS

Operability

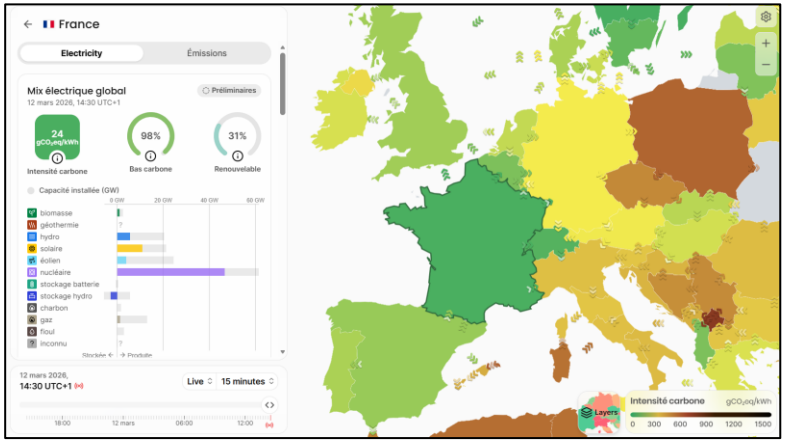
- Autonomy
- Infrastructure

TCO

- Vehicle cost
- € per kWh (break even)

CO2 savings

- Electrical mix
- I-REC



Source: site electricity map

[France | Electricity Maps]

USE CASES

Distribution France

- Milkrun deliveries from EDC or distribution platforms
- From 180 to 450 kms/day/truck
- **17 light trucks**: mainly Volvo FM and some Renault truck E-Tech D
- **-600 T.CO2**

Poland: internal site shuttles

- Internal daily trucks doing round trips from plant to warehouse
- 3 kms from point A to B
- 8 “shuttle” trucks
- Electrical mix in Poland Though weather conditions (-20° in winter)

2026 projects

- Linehauls from Clermont to distribution platforms
- 530 kms for Vitrolles (via Solignac-sur-Loire)
  370 kms for Bourges
- **4 trucks**: MAN e-TGX
- **-540 T.CO2**

04 Decarbonization project approach

Journey towards decarbonisation, with serenity

Not only a major technology shift, the real transformation IS ABOUT PEOPLE...

>100
electromobility experts

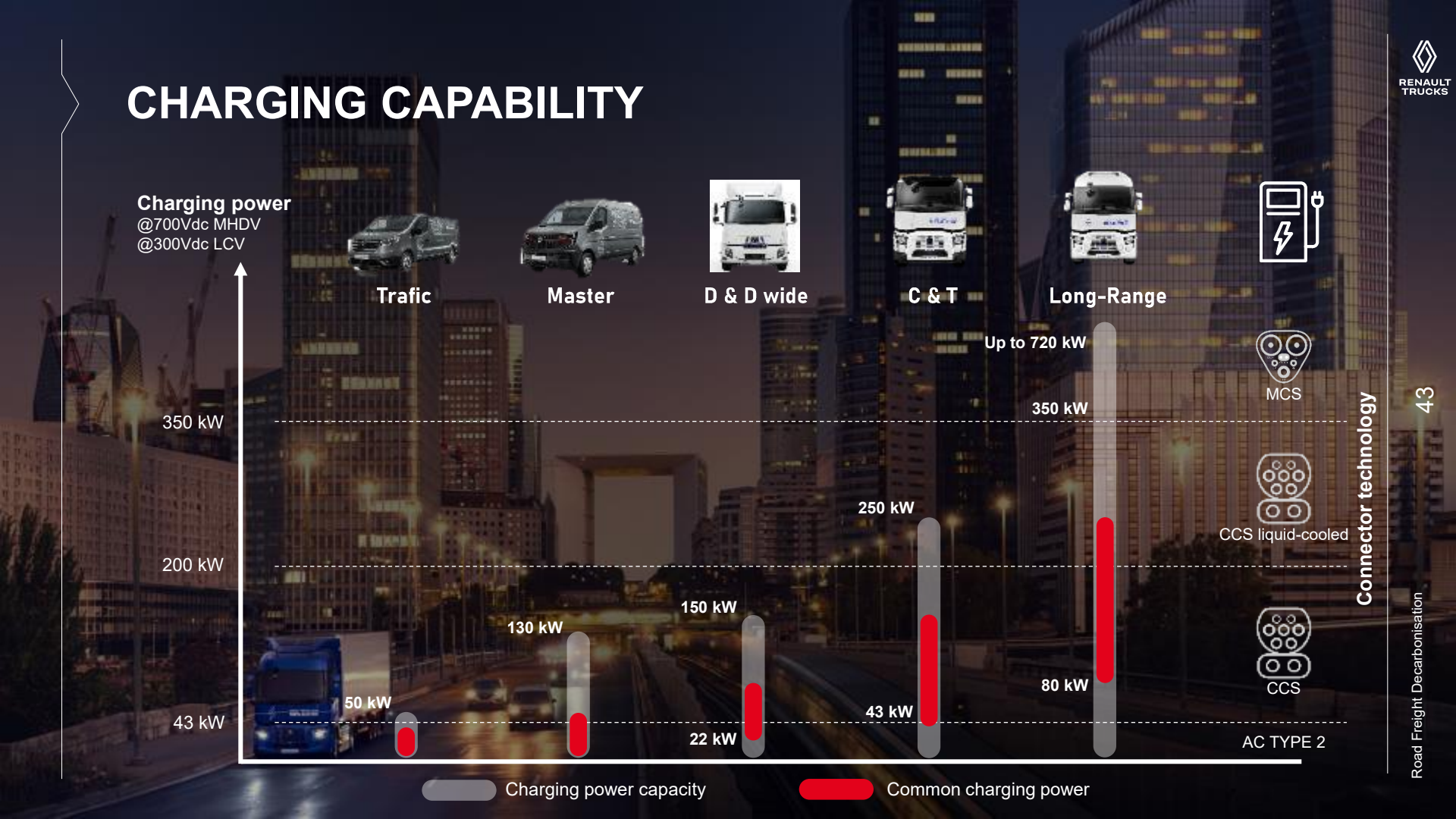
4 NEW ROLES
Energy Transition Specialist · Charging Specialist
Project Manager · Operational Efficiency Specialist

E-TECH CERTIFIED DEALERS

51,000 hours
of Electromobility trainings in 2024

05 Charging Infrastructure

CHARGING CAPABILITY



CHARGING CAPABILITY & TIME[1]

	CHARGER	Trafic 52 kWh	Master 87 kWh	D 6 BP - 564kWh	D wide 4 BP - 376 kWh	C 4 BP - 360 kWh	T 6 BP - 540 kWh	T 8 BP - 780 kWh
AC	7 kW	6h00	10h30					
AC	22 kW	2h00	3h30					
AC	43 kW			9h50	6h30	5h30	8h05	
DC	50 kW	1h00	1h30					
DC	100 kW		1h10[2]	3h55	02h40	2h20	3h20	
DC	150 kW		0h50[2]	2h50	2h00	1h40	2h20	
DC	250 kW						1h40	
DC	350 kW						1h10	1h10[3]
DC	750 kW							0h40[3]

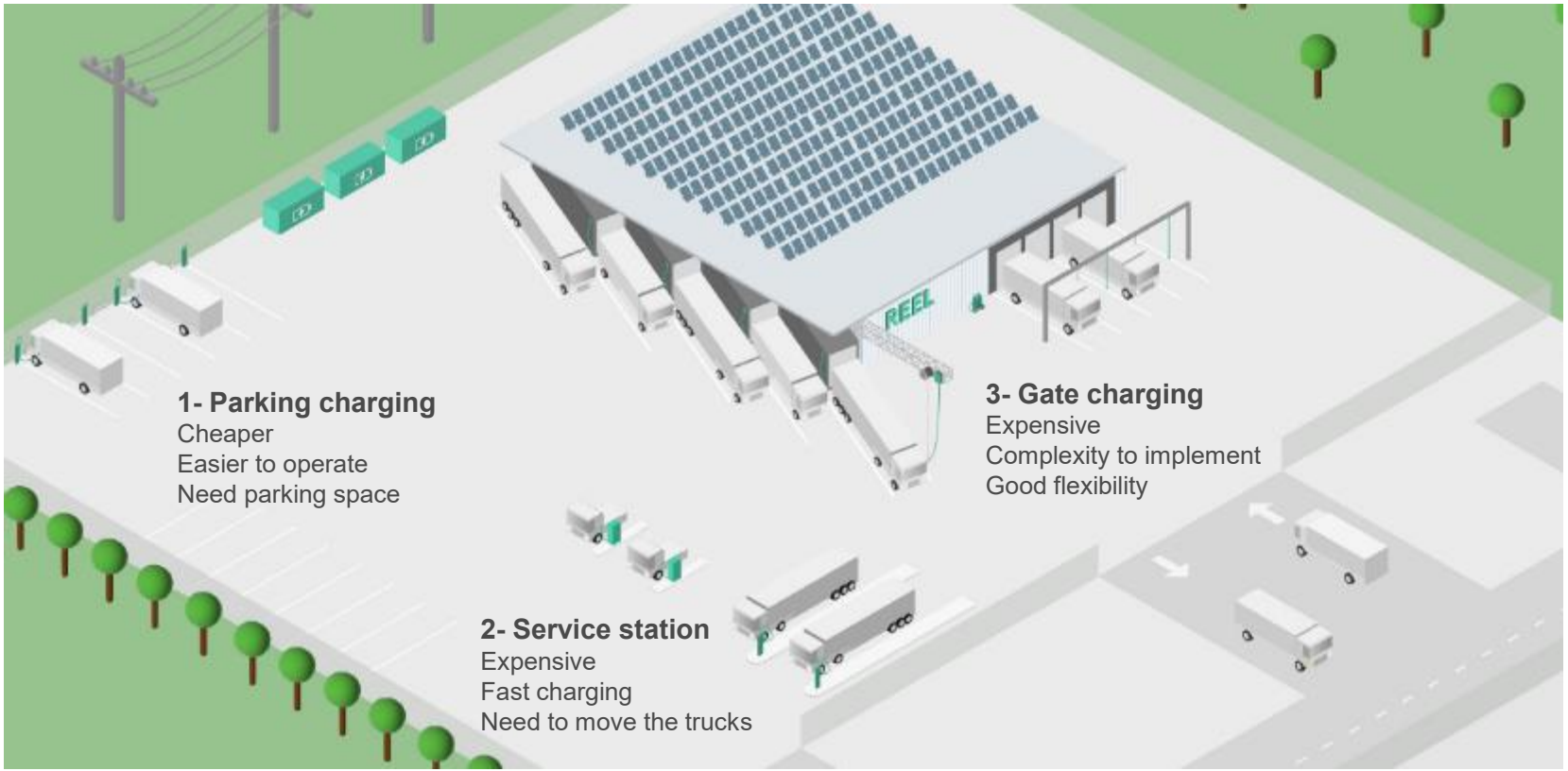
(1) Indicative time | Charging time from 20 to 100% SOC

(2) Max. charging capacity of 130 kW up to 40% SOC, 100 kW up to 70% SOC

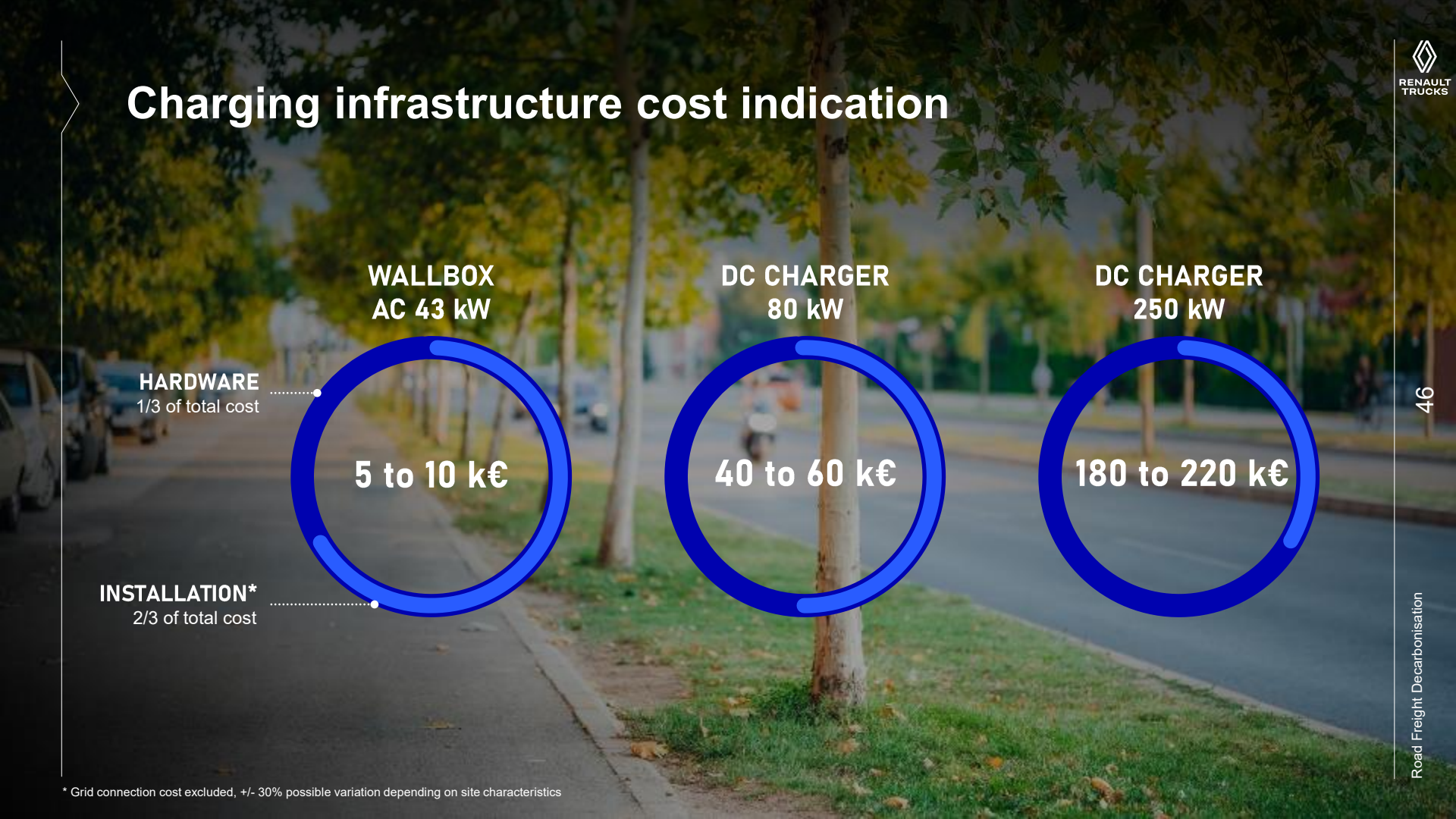
(3) from 20 to 80% SOC representative of highway charging need

Charging solutions

Depot parking charging as preferred scenario

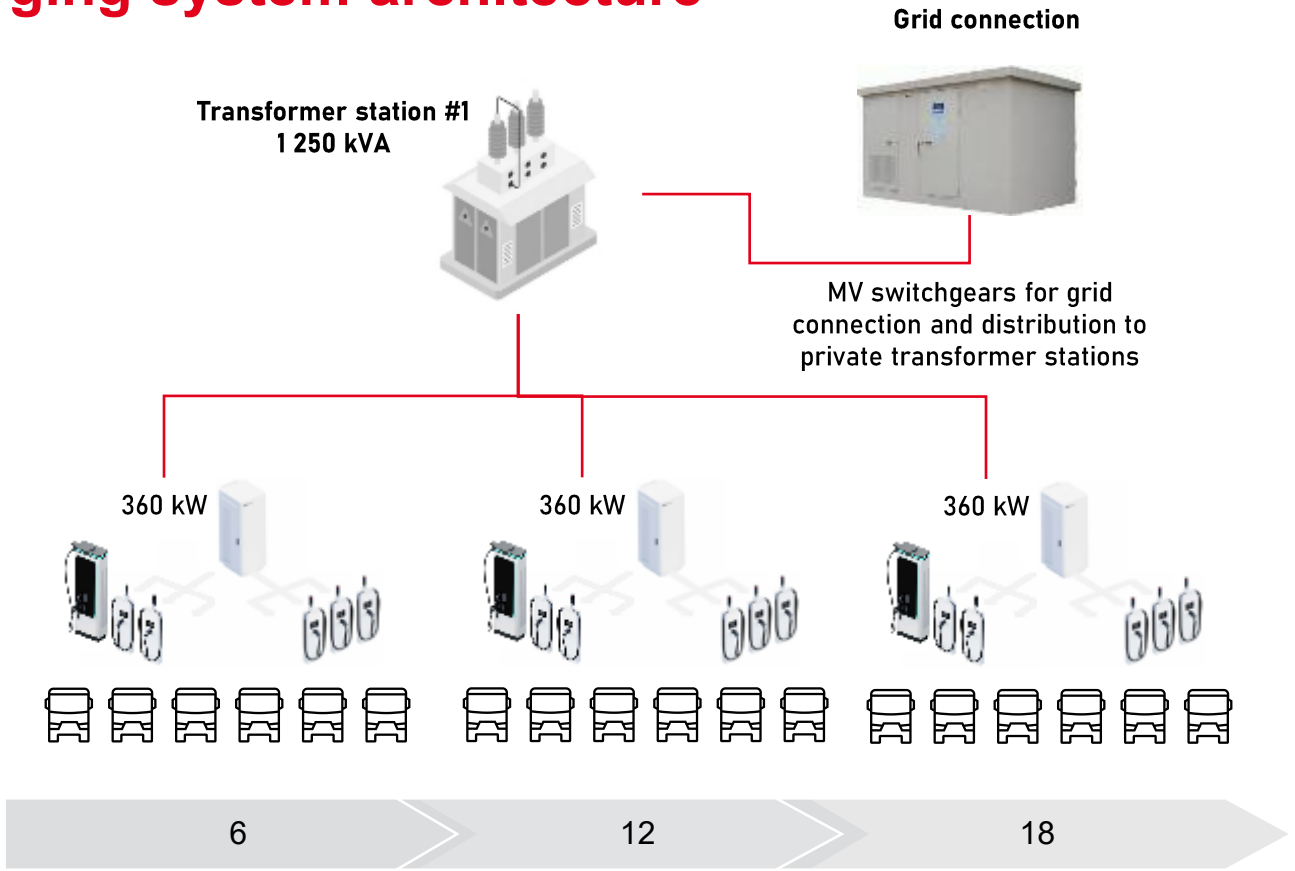


Charging infrastructure cost indication



* Grid connection cost excluded, +/- 30% possible variation depending on site characteristics

Charging system architecture



Charging system architecture
2 shifts intensive (1x360 kW or 6x60 kW)

- **Summary according to quantity of trucks**

Nb of Trucks	Hardware Price	Installation Price	Transformer station & Grid	CAPEX		Financial cost	Charger maintenance	Residual value	Total OPEX	TOTAL	Util rate	Added cost
				Total	Per Truck						%	c€/kWh
6	156 k€	93 k€	160 k€	**409 k€**	**68 k€**	88 k€	94 k€	0 k€	**182 k€**	**591 k€**	28%	8,4
12	312 k€	167 k€	160 k€	**639 k€**	**53 k€**	138 k€	187 k€	0 k€	**325 k€**	**964 k€**	28%	6,8
18	468 k€	229 k€	160 k€	**857 k€**	**48 k€**	184 k€	281 k€	0 k€	**465 k€**	**1 322 k€**	28%	6,2
24	624 k€	271 k€	160 k€	**1 055 k€**	**44 k€**	227 k€	374 k€	0 k€	**602 k€**	**1 657 k€**	28%	5,9

Truck usage: T Truck GEN II, 550 km / day, 260 day / year, 1,03 kWh/km, **Hardware cost** according to market price: 90 k€ for 360kW power unit + 8 / 26 k€ for non-liquid / liquid cooled satellite, **Amortization duration:** 8 years, **Financial cost:** 8 years loan, 5% interest rate, **Charger OPEX per year:** 3% of HW cost for preventive maintenance & supervision, 6% for corrective maintenance

- **Infrastructure added cost per kWh according to daily mileage & amortization time**

Amortization (year)	Daily mileage (km) 300	350	400	450	500	550
4	30,6	26,3	23,0	20,4	18,4	16,7
5	24,5	21,0	18,4	16,3	14,7	13,4
6	20,4	17,5	15,3	13,6	12,3	11,1
7	17,5	15,0	13,1	11,7	10,5	9,5
8	15,3	13,1	11,5	10,2	9,2	8,4
9	13,6	11,7	10,2	9,1	8,2	7,4
10	12,3	10,5	9,2	8,2	7,4	6,7

6 Trucks

Amortization (year)	Daily mileage (km) 300	350	400	450	500	550
4	25,0	21,4	18,8	16,7	15,0	13,6
5	20,0	17,1	15,0	13,3	12,0	10,9
6	16,7	14,3	12,5	11,1	10,0	9,1
7	14,3	12,2	10,7	9,5	8,6	7,8
8	12,5	10,7	9,4	8,3	7,5	6,8
9	11,1	9,5	8,3	7,4	6,7	6,1
10	10,0	8,6	7,5	6,7	6,0	5,5

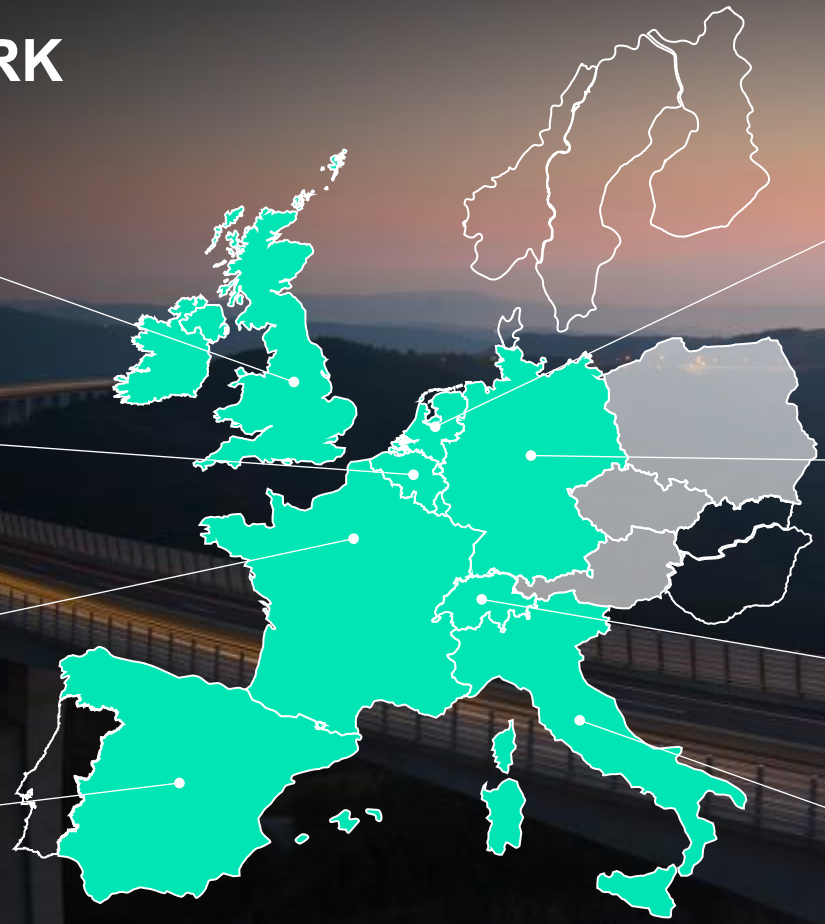
12 Trucks

Amortization (year)	Daily mileage (km) 300	350	400	450	500	550
4	22,8	19,6	17,1	15,2	13,7	12,5
5	18,3	15,7	13,7	12,2	11,0	10,0
6	15,2	13,1	11,4	10,2	9,1	8,3
7	13,1	11,2	9,8	8,7	7,8	7,1
8	11,4	9,8	8,6	7,6	6,9	6,2
9	10,2	8,7	7,6	6,8	6,1	5,5
10	9,1	7,8	6,9	6,1	5,5	5,0

18 Trucks

Infrastructure added cost to be added to energy price to calculate total charging cost. In April 2024, the energy price in France for a standard energy contract based on regulated prices is 25 c€ per kWh.

OUR NETWORK



envevo
MOBILIZE power solutions (LCV only)

CenEnergy. IMAGINE SMART CHARGING (LCV only)

bump
izivia
CHARGEPOLY
MOBILIZE power solutions (incl. LCV)

MOBILIZE power solutions (incl. LCV)

Joulz (incl. LCV)

WALL-E (LCV only)
MOBILIZE power solutions

AVIA VOLT

enel X (incl. LCV)

Agreement signed

Agreement under discussion

RENAULT TRUCKS

Public charging infrastructure development

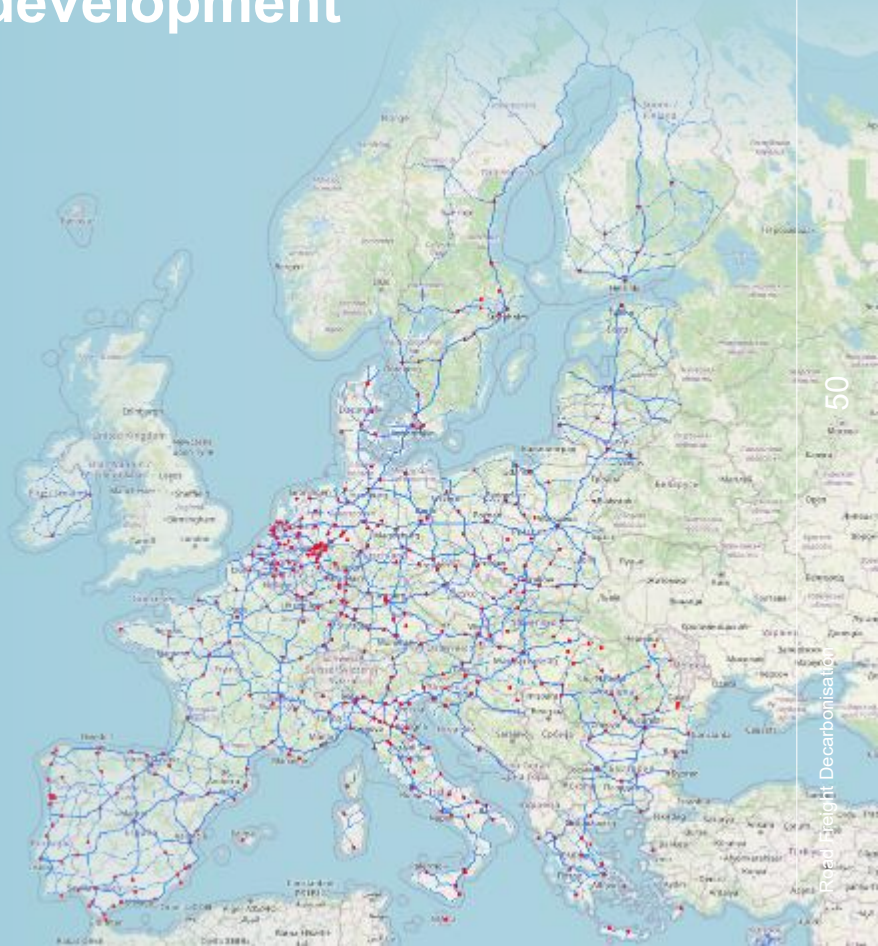
AFIR • EUROPEAN REGULATION THAT DEFINES

 # 2026 500 high power charging pools for trucks

 # 2031 Each 60 km (or 100 km on non-core networks) on the 90,000km of the main European highways

HD TRUCKS PUBLIC CHARGING HUBS LOCATIONS
(Maintained by Renault Trucks)

Public charging stations for electric trucks in Europe



CONTINUEZ A ECHANGER AVEC VOS PAIRS

France Supply Chain by Aslog

@france supply chain by aslog

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VOS QUESTIONS

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Business Intelligence

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